Upper Rio Grande River Basin SSEBop Landsat
Monthly Sum Actual Evapotranspiration 1984-2015

Monthly actual evapotranspiration (ETa) totals for the Upper Rio Grande River Basin from January 1984-December 2015 were calculated using the Operational Simplified Surface Energy Balance (SSEBop) model to quantify and map ET over irrigated fields using more than 10,000 images and associated weather datasets. Images were acquired from Landsat 5, 7 and 8 as long as they met the cloud-free (<60%) requirements. The creation of satellite-based evapotranspiration (ET) is useful for several agro-hydrologic applications such as basin water budget studies and drought monitoring. The Landsat satellite is unique in providing a field-scale estimation of ET with an unparalleled archive for historical perspective and trend analysis. The main objective of this study was to estimate historical water use in the Upper Rio Grande River Basin (URGRB) using Landsat-derived ET. valuation of the ET estimates were conducted using 6 eddy covariance (EC) flux towers, located over diverse land cover types in the basin, covering periods between 2007 and 2014. Monthly total ET were generated from overpass imagery using interpolation and aggregation techniques between overpass dates. The monthly SSEBop ET showed strong correspondence with the EC measurements with R2 > 0.80 for five out of six sites and monthly root mean square error ranging between 6 and 19 mm. These datasets can be used for water budget studies in the basin such as relative water use differences in space and historical trends. The successful development of historical ET for the basin demonstrated a promising application of SSEBop model over a large complex basin with a straightforward implementation for the entire nation. Growing season ET summaries exhibit best estimates for cumulative assessments, whereas limitations of the datasets may come from cloud-related missing data and/or cloud-contamination.
Monthly sum actual ET are provided in GeoTIFF format with associated metadata .xml file.

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Dataset Characteristics:

Temporal Granularity:	Monthly
Temporal Extent:	Jan 1984 – Dec 2015
Spatial Extent:	West: -108.518491
	East: -105.12966
	North: 38.458019
	South: 30.241475
File Size:	~ 1.25 GB (unzipped)
	~ 400 MB (zipped)
Coordinate System:	GCS_WGS_1984
Angular Unit:	Decimal Degree
Pixel Quality:	32-bit floating point
Format:	TIFF
Cellsize:	30-meter

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